Istituto Nazionale di Fisica Nucleare

Progetto per borse CSN3 per gli studenti della laurea magistrale	
Titolo del progetto:	Exotic
Esperimento/Sigla proponente:	ASFIN2
Laboratorio ospitante:	LNL
Contact person presso il laboratorio	Mazzocco Marco
Periodo previsto:	febbraio-settembre 2025
Sezioni e tutor proponenti:	LNS Pizzone PD Mazzocco PG Palmerini NA La Commara
Descrizione attività (max 1000 caratteri):	The facility EXOTIC [1] has been operational at INFN-LNL for the production of Radioactive Ion Beams (RIBs) since 2003. RIBs are produced in inverse kinematics by means of heavy-ion beams delivered by the LNL tandem accelerator impinging on gas targets and separated through a proper combination of eight ion-optical elements (six magnetic quadrupoles, a dipole magnet and a velocity filter). Being the product of a nuclear reaction, RIBs are characterized by large emittance (the product of the beam-size and transversal momentum). The use of a high-efficiency event-by-event tracking system to reconstruct the trajectory and the target position hit by the secondary beam particles could help to improve the angular resolution of the experiments. For this purpose, we have recently developed two large-area x-y position sensitive MicroChannelPlate (MCP) detectors to be installed upstream the secondary target. The candidate will work at the characterization of the detectors, at the development of the tracking algorithm and will participate to the final in-beam commissioning foreseen in Autumn 2024. The installation of the MCPs constitutes a stepping-stone for the recommissioning of the facility in view of the upcoming campaign of experiments with the EXOTIC RIBs and the gamma-ray spectrometer AGATA [2]. [1] V.Z. Maidikov et al., Nucl. Phys. A 746, 389c (2004). [2] J.J. Valiente-Dobón et al. Nucl. Inst. and Meth. A 1049, 168040 (2023)
Altre indicazioni (max 500 caratteri):	Basic knowledge of C++, GEANT4 and ROOT
Facility che il laboratorio ospitante mette a disposizione:	Mensa e Foresteria
Note:	L'esperienza svolta presso il laboratorio ospitante può essere parte integrante della attività richiesta per un progetto di tesi magistrale.